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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,079	03/11/2004	Richard Magill	3944-13-CIP-1	4830
22442	7590	08/25/2006	EXAMINER	
SHERIDAN ROSS PC 1560 BROADWAY SUITE 1200 DENVER, CO 80202			SHECHTMAN, SEAN P	
			ART UNIT	PAPER NUMBER
			2125	

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/800,079

Applicant(s)

MAGILL ET AL.

Examiner

Sean P. Shechtman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/11/04; 6/2/05</u>   | 6) <input checked="" type="checkbox"/> Other: <u>IDS filed 10/28/05</u>     |

### **DETAILED ACTION**

1. Claims 1-30 are presented for examination.

#### ***Drawings***

2. Color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claims 1 and 8, it is unclear if the variables within and outside of parenthesis are intended to be claim limitations.

Referring to claims 1 and 8, the claims contain variables which have not been defined.

Claim 1 recites the limitation "the curing evaluators" in line 24. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the predictive effectiveness for E1" in line 32. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "said particular frequency" in line 1. There is insufficient antecedent basis for this limitation in the claim.

The term "approximately" in claim 4 is a relative term which renders the claim indefinite. The term "approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The particular frequency has been rendered indefinite by the use of the term approximately.

Claim 8 recites the limitation "the rubber component RC of (a1) for CC" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the rubber component RC of (a2) for CC" in line 2. There is insufficient antecedent basis for this limitation in the claim.

The term "substantially" in claim 9 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The rubber compound cured for creating the part has been rendered indefinite by the use of the term substantially. The term "substantially" is often used in conjuncture with another term to describe a particular characteristic of the claimed invention. It is a broad term. In re Nehrenberg, 280 F 2d 161, 126 USPQ 383 (CCPA 1960).

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The court held that the limitation “to substantially increase the efficiency of the compound as a copper extractant” was definite in view of the general guidelines contained in the specification and the rest of the claim. In re Mattison 509 F .2d 563, 184 USPQ 484 (CCPA 1975). The examiner respectfully submits that the instant specification and claims fails to provide for the general guidelines required to make these limitations definite.

The term "substantially" in claims 19-20 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The determination of impedance responses has been rendered indefinite by the use of the term substantially. The term “substantially” is often used in conjuncture with another term to describe a particular characteristic of the claimed invention. It is a broad term. In re Nehrenberg, 280 F 2d 161, 126 USPQ 383 (CCPA 1960). The court held that the limitation “to substantially increase the efficiency of the compound as a copper extractant” was definite in view of the general guidelines contained in the specification and the rest of the claim. In re Mattison 509 F .2d 563, 184 USPQ 484 (CCPA 1975). The examiner respectfully submits that the instant specification and claims fails to provide for the general guidelines required to make these limitations definite.

Claim 21 recites the limitation "the rubber" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 23 recites the limitation "the segments" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-9, 12, 14-17, 21-30 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 4,773,021 to Harris et al (supplied by applicant).

Referring to claim 1, Harris teaches a method for curing one or more parts, comprising:  
determining, for each evaluator of a plurality of evaluators, a part curing predictive effectiveness (Col. 5, lines 26-34);

wherein for each of said evaluators (E), said step of determining determines, for a plurality of curing conditions (Col. 9, lines 57-62), a correspondence between (a1) and (a2) following:

(a1) outputs by the evaluator E, wherein for each curing condition (CC.sub.j) of the curing conditions, there is a portion of the outputs obtained when the evaluator E is provided with a corresponding activation input that includes a sequence of impedance responses from a device providing signals indicative of impedance measurements of a rubber compound (RC), wherein the rubber compound RC is being cured: (i) according to the curing condition CC.sub.j; and (ii) in curing equipment that is also to be used in curing the part (Col. 7, lines 21-54), and

(a2) for each curing condition (CC.sub.k) of the curing conditions, a known curing time of a rubber compound for the curing condition CC.sub.k (Col. 9, lines 57-62);

providing, for each of a plurality of predetermined frequencies, an electrical current to the device, wherein the device outputs signals indicative of impedance measurements for a rubber

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compound from which the part is being formed in the curing equipment (Col. 3, lines 20-22; Fig. 5, Col. 4, lines 28-34);

receiving, for each of said frequencies, an impedance data stream including a sequence of impedance responses from said device during the curing of the part (Col. 4, lines 32-34);

for each of one or more of the curing evaluators, activating the evaluator for obtaining a corresponding result related to a prediction of a cure time of the part, when the evaluator is provided with a corresponding activation input from said impedance data streams (Col. 7, lines 21-54);

using the corresponding results from the one or more evaluators for obtaining a predicted cure time for the part (Fig. 6, element 60; Col. 7, lines 48-54);

wherein a step of identifying is performed prior to said step of using, and said step of identifying identifies at least one of the evaluators (E.sub.1) for predicting a cure time for the part, wherein the predictive effectiveness for E.sub.1 is better than the predictive effectiveness of at least one other of the evaluators (E identified as more effective initially, for conditions given in Fig. 6, elements 56 and 57, Col. 7, lines 55 – Col. 8, line 5; C identified as more effective under conditions given in Fig. 6, elements 56 and 58, Col. 7, lines 55 – Col. 8, line 23).

2. The method of claim 1, wherein each of the curing conditions includes at least a curing temperature, and an identifier for identifying a particular batch from which the rubber compound RC is obtained (Col. 9, lines 57-62; Col. 8, lines 32-39).

3. The method of claim 1, wherein for each of the evaluators, the corresponding activation input includes a predetermined segment of an entire impedance data stream indicative

of the impedance measurements of the rubber compound RC in response to a particular frequency being input to the device (Col. 7, lines 21-44).

4. The method of claim 1, wherein said particular frequency is approximately one of the predetermined frequencies (Col. 7, lines 21-44).

5. The method of claim 1, wherein the rubber compound includes a rubber polymeric compound (Col. 2, line 60).

6. The method of claim 1, wherein said curing equipment includes at least one of: an injection molding equipment, a compression molding equipment, a transfer molding equipment, a belt press, and an autoclave (Col. 4, lines 15-34).

7. The method of claim 1, wherein the rubber compound includes at least one of: styrene-butadiene, polybutadiene, polyisoprene, ethylene-propylene, butyl, halobutyl, nitrile, polyacrylic, neoprene, hypalon, silicone, fluorcarbon elastomers, polyurethane elastomers, natural rubber and hydrogenated nitrile-butadiene rubber (Col. 2, line 60).

8. The method of claim 1, wherein for each curing condition (CC) of at least most of the curing conditions, the rubber compound RC of (a1) for CC, and the rubber compound of (a2) for CC are from a same rubber compound batch (Col. 9, lines 57-62; Col. 8, lines 32-39).

9. The method of claim 1, wherein a rubber compound cured for creating the part substantially has each of its constituent ingredients in a range of some instance of the rubber compound RC corresponding with one of the curing conditions CC.sub.j (Col. 2, line 60).

12. The method of claim 1, wherein said determining step includes performing a statistical correlation between the outputs of (a1), and the curing times of (a2) (Col. 7, lines 25-44).



14. The method of claim 1, wherein at least one of the evaluators determines one of: (1) a maximum impedance value, (2) a time value for a maximum impedance, (3) a time value for a minimum impedance, (4) a value indicative of an area under a graph of a series of impedance values, (5) a slope obtained from a series of impedance values, (6) a dampening coefficient of a curve fitted to a series of impedance values, and (7) an amplitude coefficient of a curve fitted to a series of impedance values (Fig. 6, element 56).

15. The method of claim 14, wherein at least most of (1) through (7) are determined by the evaluators (Fig. 6, element 56).

16. The method of claim 1, wherein at least a majority of the plurality of predetermined frequencies are in a range of 10 hz to 5 Mhz (Col. 3, lines 20-22).

17. The method of claim 1, wherein the number of different frequencies of the plurality of predetermined frequencies can be greater than or equal to 4 (Col. 3, lines 20-22; Col. 7, lines 30-31).

21. The method of claim 1, wherein an electrode is operatively connected to the curing equipment and the device, wherein the impedance measurements and the impedance responses are indicative of responses from a capacitor formed using the electrode and a sample of the rubber (Col. 2, lines 10-13).

22. The method of claim 1, further including a step of dividing at least one of the impedance data streams into a plurality of segments (Fig. 6, element 51).

23. The method of claim 1, wherein for at least of the evaluators, its corresponding activation input is one of the segments (Fig. 6, element 56).

24. The method of claim 1, wherein said step of using includes combining the corresponding results from at least two evaluators (Fig. 6, element 60).

25. The method of claim 24, wherein said combining step includes providing the corresponding results from the at least two evaluators to a predetermined multiple regression equation (Col. 8, lines 24-31).

26. The method of claim 1, wherein said identifying step includes correlating the output of (a1) for the evaluator E.sub.1 with the known curing times of (a2) (Col. 9, lines 57-62).

27. The method of claim 1, further including the step of: selecting the outputs of (a1) for each of a subset of the evaluators and their corresponding activation inputs; combining the selected outputs in each of a plurality of combinations; and determining at least one of the combinations having a predictive effectiveness that is better than the predictive effectiveness of at least one of the evaluators (Fig. 6, element 60; Col. 8, lines 24-31).

28. The method of claim 27, wherein said selecting step includes choosing for the outputs of (a1) that are correlate better with the known curing times of (a2) than the outputs of (a1) that are not chosen (Col. 7; lines 21-44).

29. The method of claim 27, wherein said combining step includes: obtaining a value indicative of a maximum number of the outputs to be provided in each of the combinations (Fig. 6, element 56).

30. The method of claim 27, wherein said determining at least one of the combinations includes performing a multiple regression of at least some of the combinations against the known curing times of (a2) (Col. 8, lines 24-31).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 10, 11, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris as applied to claim 1 above, and further in view of U.S. Pat. No. 4,546,438 to Prewitt et al (hereinafter referred to as Prewitt).

Referring to claim 10, Harris teaches each known curing time is indicative of an elapsed time for curing the rubber compound for curing condition CC.sub.k to cross-linking (Col. 1, lines 38-57).

Referring to claims 10, 11, and 13, Harris fails to teach each known curing time is indicative of an elapsed time for curing the rubber compound for curing condition CC.sub.k to a predetermined elastic torque value; wherein each known curing time is indicative of an elapsed time for curing the rubber compound for curing condition CC.sub.k to a percentage of a

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maximum elastic torque; wherein the known curing times of (a2) are determined using a rheometer.

However, referring to claims 10, 11, and 13, Prewitt teaches analogous art, wherein known curing time is indicative of an elapsed time for curing the rubber compound for curing condition CC.sub.k to a predetermined elastic torque value; wherein each known curing time is indicative of an elapsed time for curing the rubber compound for curing condition CC.sub.k to a percentage of a maximum elastic torque; wherein the known curing times of (a2) are determined using a rheometer (Abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the curing indication and instrumentation of Prewitt with the teachings of Harris.

One of ordinary skill in the art would have motivated to combine these reference because Prewitt teaches a precision rheometer apparatus, and curing and testing process, which accurately predict maximum torque at peak stress, to make possible the termination of each cure and test before the actual achievement of maximum torque at peak stress (Col. 1, lines 52- Col. 2, line 23).

6. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris as applied to claim 1 above, and further in view of U.S. Pat. No. 5,432,435 to Strong et al (hereinafter referred to as Strong).

Referring to claims 18-20, Harris teaches said device includes at least one of: a non-bridged dielectric or impedance measurement circuit wherein said device determines the

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impedance responses of (a1) substantially from an output from the non-bridged dielectric or impedance measurement circuit (Col. 4, lines 28-34),

Referring to claims 18-20, Harris fails to teach a voltage divider circuit for determining the impedance responses of (a1); wherein said device determines the impedance responses of (a1) substantially from an output from the voltage divider circuit.

However, referring to claims 18-20, Strong teaches analogous art, including voltage divider circuit for determining the impedance responses; wherein the device determines the impedance responses substantially from an output from the voltage divider circuit (Col. 9, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the voltage divider of Strong with the teachings of Harris.

One of ordinary skill in the art would have motivated to combine these reference because Strong teaches a device and method for enabling the determination of the extent of cross linking in any resistive polymer which can be effectively applied during the pre-cure stage of a polymer, wherein the polymer is maintained at low temperatures for minimizing cross linking, and further provide ongoing or continuous detection of cross linking within a pre-cure polymer to provide a low cost system which is convenient to use under virtually all situations by correlating the voltage difference as a relative indicator of the extent of cross-linking which has occurred within the polymer material, based on comparison of magnitude of the voltage difference with respect to a comparable potential range of impedance for the polymer material from its lower impedance stage at minimal cross-linking to its high impedance stage at maximum impedance for total cross-linking (Col. 3, line 27 – Col. 4, line 22).

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

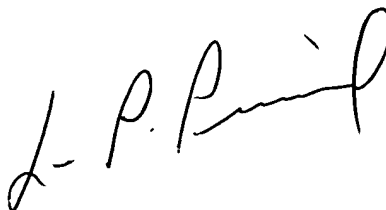
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SPS

Sean P. Shechtman

August 20, 2006



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